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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/511,204

05/10/2005

Sergio Belli

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22852

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10/05/2005

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EXAMINER

MAYO III, WILLIAM H

ART UNIT

PAPER NUMBER

2831

DATE MAILED: 10/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/511,204

Applicant(s)

BELLI ET AL.

Examiner

William H. Mayo III

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 35-68 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 35-68 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 October 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 10/14/04&05/10/05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for domestic priority under 35 U.S.C. 120, the parent application being filed as Application No. PCT/EP02/04210, on April 16, 2002.

Information Disclosure Statement

2. The information disclosure statements filed October 14, 2004 and May 10, 2005 have been submitted for consideration by the Office. They have been placed in the application file and the information referred to therein has been considered.

Drawings

3. The drawing is objected to because Figures 1-3 lack the proper cross hatching which indicates the type of materials which may be in an invention. Specifically, the cross hatching material to indicate the conductor and insulator material is improper. The applicant should refer to MPEP Section 608.02 for the proper cross hatching of materials which are defined in the claims and specification of the applicant. Correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 35-41, 43, 51-52, and 56-68 are rejected under 35 U.S.C. 102(b) as being anticipated by Belli et al (Pat Num WO 98/52197, herein referred to as Belli). Belli discloses an electrical cable (Figs 1-5b) that is capable of protecting the cable against accidental impacts (abstract). Specifically, with respect to claim 35, Belli discloses an electrical cable (Fig 1) comprising a conductor (1) and an insulating coating (3) surrounding the conductor (1), wherein the insulating coating (3) has a predetermined thickness and comprises at least two insulating layers (inner insulating layer like 6, not shown and 10), wherein in a radial direction from the inside toward the outside the electrical cable (Fig 1) may comprises at least one insulating layer (not shown) made of non expanded polymeric material (Page 14, lines 1-9), at least one expanded polymeric material (as shown in 10), wherein the at least one insulating layer of non-expanded polymeric material (not shown) is integral with the at least one insulating layer made of a non expanded polymeric material (10, layer is extruded, thereby inherently bonding with adjacent layers, Page 13, lines 34-35). With respect to claim 36, Belli discloses that the thickness of the at least one insulating layer made of non-expanded polymeric material (not shown) is at least half of the predetermined thickness of the said insulating coating (inner 6 not shown may be at least 0.5mm (Page 9, lines 1-5) and the expanded

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polymeric layer may be at least 0.5 mm (Page 8, lines 1-5). With respect to claim 37, Belli discloses that the thickness of the at least one insulating layer (not shown, Page 14, lines 3-8) made of non expanded polymeric material may be at least 70% of the predetermined thickness of the insulating coating (inner 6 not shown may be at least 0.5mm (Page 9, lines 1-5) and the expanded polymeric layer may be at least 0.5 mm, such as 1.5 mm (Page 8, lines 1-5). With respect to claim 38, Belli discloses that the thickness of the at least one insulating layer (not shown, Page 14, lines 3-8) made of non expanded polymeric material may be at least 85% of the predetermined thickness of the insulating coating (inner 6 not shown may be at least 0.5mm (Page 9, lines 1-5) and the expanded polymeric layer may be at least 0.5 mm, such as 1.5 mm (Page 8, lines 1-5). With respect to claim 39, Belli discloses that the at least one insulating layer of non-expanded polymeric material (not shown) is bonded with the at least one insulating layer made of a non expanded polymeric material (10, layer is extruded, thereby inherently bonding with adjacent layers, Page 13, lines 34-35). With respect to claim 40, Belli discloses that the at least one insulating layer made of expanded material (10) is co-extruded with the at least one insulating layer of non expanded polymeric material (Page 35, Lines 34-35). With respect to claim 41, Belli discloses that the at least one insulating layer of non-expanded polymeric material (not shown) adheres with the at least one insulating layer made of a non-expanded polymeric material (10, layer is extruded, thereby inherently bonding with adjacent layers, Page 13, lines 34-35). With respect to claim 43, Belli discloses that the expanded material (10) may be an intermediate layer between an inner insulating layer (inner 6) and outer insulating layer

(outer layer), both layers made of non expanded polymeric material (Page 14, lines 3-8). With respect to claim 51, Belli discloses that the intermediate insulating layer (10a) is provided circumferentially continuous in the cross section (Fig 2). With respect to claim 52, Belli discloses that the expanded polymeric material (10) is obtained from a polymeric material that before expansion has a flexural modulus at room temperature measured according to ASTM Standard D790 between 20-600 Mpa (Page 7, lines 23-30). With respect to claim 56, Belli discloses that the polymeric material of the at least one insulating layer is an expandable polymeric material selected from the group of polyolefins, copolymers of various olefins, olefins/unsaturated esters copolymers, polyesters, and their mixtures (Page 8, lines 1-27). With respect to claim 57, Belli discloses that the expandable polymer may be PVC (Page 8, lines 18-19). With respect to claim 58, Belli discloses that the at least one insulating layer of non-expandable polymeric material (inner layer) and the expanded polymeric material (10) may be made from the same base polymeric material, such as PVC (Pages 8 & 14, lines 18-19 & 18-34). With respect to claim 59, Belli discloses that the at least one insulating layer made of expanded material (10) has an expansion degree between 2-500% (Page 7, lines 31-35). With respect to claim 60, Belli discloses that the at least one insulating layer made of expanded material (10) has an expansion degree between 2-200% (Page 7, lines 31-35). With respect to claim 61, Belli discloses that the at least one insulating layer made of expanded material (10) has an expansion degree between 10-50% (Page 7, lines 31-35). With respect to claims 62-63, Belli discloses that the at least two insulating layers (inner layer not shown, 10) have a thickness of greater than 0.07mm (i.e. greater than

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0.05 mm, Page 20, lines 1-7) and therefore would have an insulating constant greater than 750 MΩ (km) at 20°C and 0.3 MΩ (km) at 70°C. With respect to claim 64, Belli discloses that the at least one insulating layer (10) of expanded polymeric material is between 0.005-1 mm (Page 20, lines 1-7). With respect to claim 65, Belli discloses that the at least one insulating layer (10) of expanded polymeric material is between 0.1-0.50 mm (Page 20, lines 1-7). With respect to claim 66, Belli discloses a process for manufacturing an electric cable (Fig 1) comprising a conductor (1) and an insulating coating (3) surrounding the conductor (1), wherein the insulating coating (3) has a predetermined thickness and comprises at least two insulating layers (inner insulating layer like 6, not shown and 10), wherein in a radial direction from the inside toward the outside the electrical cable (Fig 1) may comprises at least one insulating layer (not shown) made of non expanded polymeric material (Page 14, lines 1-9), and at least one expanded polymeric material (as shown in 10), wherein the at least one insulating layer of expanded polymeric material (10) comprises the steps of feeding the conductor (1) into an extruding machine (Page 24, lines 10-15), depositing by co extrusion a non expanded material (not shown) in a position radially external to the conductor (1) for form a layer of non expandable polymeric material (Page 14, lines 3-8), and a expanded polymeric material (10) position radially external to the at least one insulating layer (Fig 1) and expanding the expandable polymeric material during the step of depositing of extrusion (Page 24, lines 15-26). With respect to claim 67, Belli discloses that the expanding step may be done by adding an expansion agent (Page 15, lines 16-28). With respect to claim 68, Belli discloses that the step of expanding is affected during the

step of depositing by co-extrusion by injecting a gas at a high pressure (Page 28, see Tables 1 & 2).

6. Claims 35, 43, and 44-51 are rejected under 35 U.S.C. 102(b) as being anticipated by Hayashi (JP Pat Num 09-035544). Hayashi discloses an electrical cable (Fig 1-5) that improves production efficiency due to its lightness and flexibility (abstract). Specifically, with respect to claim 35, Hayashi discloses an electrical cable (Fig 1) comprising a conductor (2) and an insulating coating (3 & 7) surrounding the conductor (2), wherein the insulating coating (3 & 7) has a predetermined thickness and comprises at least two insulating layers (3 & 7), wherein in a radial direction from the inside toward the outside the electrical cable (Fig 1) may comprises at least one insulating layer (3) made of non expanded polymeric material (Page 2, paragraph 7), at least one expanded polymeric material (7, i.e. expanded PVC, paragraph 7), wherein the at least one insulating layer of non-expanded polymeric material (3) is integral with the at least one insulating layer made of a non expanded polymeric material (7, layer is extruded, thereby inherently bonding with adjacent layers). With respect to claim 43, Hayashi discloses that the at least one insulating layer (3 & 7) comprises an expanded polymeric material layer (7) which is an intermediate layer between an inner insulating layer (3) and external insulating layer (6), made of non-expanded polymeric material. With respect to claim 44₄₃, Hayashi discloses that the intermediate insulating layer (7) is circumferentially non-continuous in the cross section (Fig 2). With respect to claim 45, Hayashi discloses that the intermediate insulating layer (7) presents at least one interruption (Fig 1). With respect to claim 46, Hayashi discloses that the intermediate

insulating layer (7) presents at least one interruption (Fig 1) located along the external profile of the inner insulating layer (3, Fig 2). With respect to claim 47, Hayashi discloses that the intermediate insulating layer (7) presents at least one interruption (Fig 1) located in the proximity of the external profile of the inner insulating layer (3, Fig 2). With respect to claim 48, Hayashi discloses that the circumferentially non-continuous intermediate insulating layer (7) comprises at least one semi-circular sector (outside edge of 7, as shown in Figures 1-2). With respect to claim 49, Hayashi discloses that the circumferentially non-continuous intermediate insulating layer (7) is provided within the inner insulating layer (3, Fig 2). With respect to claim 50, Hayashi discloses that the circumferentially non-continuous intermediate insulating layer (7) is provided within the external insulating layer (6, Fig 2).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

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not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Belli (Pat Num WO 98/52197) in view of Yamamoto (Pat Num EP 0 271 990). Belli discloses an electrical cable (Figs 1-5b) that is capable of protecting the cable against accidental impacts (abstract) as disclosed with respect to claim 35 above.

However, Belli doesn't specifically disclose the PVC outer insulating layer being made of expanded PVC (claim 42).

Yamamoto teaches an insulated cable (Figs 1-3) that is aimed at overcoming the disadvantages of prior art cables and there manufacturing methods, such as manufacturing speeds and the structural makeup of the finished prior art cables (Page 2, lines 19-31). Specifically, with respect to claim 42, Yamamoto teaches an insulated cable (Fig 2), wherein the outermost layer (2) is an expanded polymeric layer (Page 2, lines 30-40).

With respect to claim 42, it would have been obvious to one having ordinary skill in the art of cables at the time the invention was made to modify the insulated cable of Belli to comprise the outermost layer being an expanded polymeric material as taught by Yamamoto because Yamamoto teaches that such a configuration is aimed at overcoming the disadvantages of prior art cables and there manufacturing methods, such as manufacturing speeds and the structural makeup of the finished prior art cables (Page 2, lines 19-31).

10. Claims 53-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Belli (Pat Num WO 98/52197). Belli discloses an electrical cable (Figs 1-5b) that is capable of protecting the cable against accidental impacts (abstract) as disclosed with respect to claim 35 above.

However, Belli doesn't specifically disclose the flexural modulus being less than 200 MPa (claim 53), nor the flexural modulus being between 20-200 MPa (claim 54), nor the flexural modulus being between 10-150 MPa (claim 55).

With respect to claims 53-55, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the insulated cable of Belli to comprise the flexural modulus to be less than 200MPa, specifically, between 10-150MPa, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Conclusion


11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. They are Scheidecker et al (Pub Num 2003/ 0079903), Shimba et al (Pat Num 4,468,435), Yamanishi et al (Pat Num 5,192,834), Randa (Pat Num 4,711,811), Tomlinson (Pat Num 3,315,025), McGregor et al (Pat Num 5,750,931), Hill et al (Pat Num 4,443,657), Yamanishi et al (Pat Num 5,128,175), Kennedy et al (Pat Num 5,210,377), and Hardie et al (Pat Num 5,574,250), all of which disclose cables having expanded insulations.

Communication

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to William H. Mayo III whose telephone number is (571)-272-1978. The examiner can normally be reached on M-F 8:30am-6:00 pm (alternate Fridays off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean Reichard can be reached on (571) 272-2800 ext 31. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


William H. Mayo III
Primary Examiner
Art Unit 2831

WHM III
September 19, 2005